

What is claimed is:

1. A resistance soldering iron comprising:

a soldering tip having a longitudinally extending body terminating in a bit;

and

a pair of conductors in contact with the body of the soldering tip, the conductors comprising carbon adapted to be connected to a source of electrical current to generate heat within the soldering tip when the conductors are connected to a source of electricity.

2. The soldering iron of claim 1 further including a handle to permit grasping

of the soldering iron.

3. The soldering iron according to claim 2 further provided with a pivot feature to permit a user to adjust the angle of the body of the soldering tip and the electrodes with respect to the handle.

4. The soldering iron according to claim 3 wherein each carbon conductor is a graphite electrode that is pivotally secured to a buss bar utilizing a fastener.

5. The soldering iron according to claim 1 wherein the body of the soldering tip includes a pair of longitudinally extending trapezoidal slots and each carbon electrode has a trapezoidal cross-sectional shape and engages one of the slots in the body of the soldering tip.

6. The soldering iron according to claim 1 wherein each carbon electrode has a surface that conforms to the body of the soldering tip, and the soldering iron includes clamping means for frictionally engaging the electrodes with the body when tightened and for permitting the body to slide in a longitudinal direction with respect to the electrodes when loosened.

7. The soldering iron according to claim 1 wherein each of the electrodes is a cylindrical plug, the body of the soldering tip contains corresponding blind holes, and the electrodes are secured in said body.

8. A method of using an electrical resistance soldering iron composed of a soldering tip, having a longitudinally extending body terminating in a bit, to solder contiguous metal pieces together, comprising the steps of:

- a) securing the body of the soldering tip between a pair of shaped carbon electrodes;
- b) passing electrical current through the electrodes to heat the bit to soldering temperature;
- c) juxtaposing the metal pieces to be joined by solder;
- d) flowing solder that has been heated and liquefied by the soldering iron onto the juxtaposed pieces; and
- e) allowing the solder to cool to join the pieces together.

9. The method according to claim 8 wherein the pieces to be joined are sheet metal.

10. The method according to claim 8 wherein the step of securing the body
5 between the electrodes includes the steps of providing two diametrically opposed, blind, longitudinal slots in the body of the soldering tip, and inserting the carbon electrodes into the slots.

11. The method according to claim 10 of providing the electrodes and the
10 blind slots with corresponding trapezoidal shapes and securing the electrodes in the slots using an insulated disc attached to the body of the soldering tip and covering the opening of the slot.

12. The method according to claim 8 further including the step of providing a
15 handle to permit the soldering iron to be hand held during soldering.

13. The method according to claim 12 further including the step of providing
means to permit the soldering tip to be pivoted with respect to the handle.

14. The method of claim 8 including the steps of shaping the electrodes to
20 conform to the outer perimeter of the body of the soldering tip, and clamping the electrodes to the body.

15. The method according to claim 14 further including the step of unclamping the electrodes to permit longitudinal adjustment of the soldering tip with respect to the electrodes.

5 16. A device for the resistance soldering of sheet metal comprising:

 a) a source of low voltage electrical current; and

 b) a soldering iron having

 1. a soldering tip comprising a longitudinally extending body
terminating in a bit;

10 2. a pair of carbon electrodes joined to the source of low voltage
electrical current and coupled to the body of the soldering tip; and

 3. a handle with which to safely hold the soldering iron.

15 17. The device according to claim 16 wherein the electrodes and the body of
the soldering tip are rotationally movable with respect to the handle.

 18. The device according to claim 16 wherein the body of the soldering tip
includes two opposed, blind, longitudinal slots, and the carbon electrodes are conformally
shaped to fit into the slots and are held in place by fasteners.

20 19. The device according to claim 16 wherein the carbon electrodes are
shaped to conform to the periphery of the body, and clamping means are used to secure

the body between the electrodes and to either permit or to limit relative axial movement of the body with respect to the electrodes.

5 20. The device according to claim 17 wherein the carbon electrodes are cylindrical plugs that are secured in corresponding blind holes in the body of the soldering tip.